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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,630	08/06/2003	Guy M. Danner	H-356	1629
26245	7590	11/01/2005	EXAMINER	
DAVID J COLE E INK CORPORATION 733 CONCORD AVE CAMBRIDGE, MA 02138-1002			BODDIE, WILLIAM	
			ART UNIT	PAPER NUMBER
			2674	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/604,630	<b>Applicant(s)</b> DANNER ET AL.	
	<b>Examiner</b> William Boddie	<b>Art Unit</b> 2674	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 12-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/20/05</u>                                                               | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-11, drawn to a heat shield for use in display technology, classified in class 345, subclass 205.
  - II. Claims 12-20, drawn to electrophoretic medium, classified in class 359, subclass 296.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as decreasing the thermal expansion coefficient in electrophoretic displays. See MPEP § 806.05(d). It should also be noted that by applicant's own admission Inventions I and II are "two discrete methods" that can be "used alone or in combination" (para. 32).
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with David J. Cole on October 17, 2005 a provisional election was made with traverse to prosecute the invention of I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Albert et al. (US 6,118,426).

With respect to claim 11, Albert discloses, an electro-optic display comprising: a layer of reflective electro-optic material (832 in fig. 8e) capable of changing its optical

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state on application of an electric field thereto (col. 18, lines 21-23); at least one electrode arranged to apply an electric field to the layer of electro-optic material (833 in fig 8e)); a heat generating component in heat conducting relationship with the layer of electro-optic material (836/834 in fig. 8e); and a layer of thermally conducting material disposed between the heat generating component and the layer of electro-optic material (838 in fig. 8e, also col. 18, lines 46-48).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2-4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albert et al. (US 6,118,426) in view of Cheriff et al. (US 5,008,656).

**With respect to claim 1**, Albert discloses, an electro-optic display comprising: a layer of reflective electro-optic material (832 in fig. 8e) capable of changing its optical state on application of an electric field thereto (col. 18, lines 21-23); at least one electrode arranged to apply an electric field to the layer of electro-optic material (833 in fig 8e)); a heat generating component in heat conducting relationship with the layer of electro-optic material (836/834 in fig. 8e).

Albert does not explicitly disclose, a heat shield disposed between the heat generating component and the layer of electro-optic material, the heat shield comprising a layer of thermally insulating material and a layer of thermally conducting material, the

layer of thermally conducting material being disposed between the layer of thermally insulating material and the layer of electro-optic material.

Cheriff discloses, creating a printed circuit board with layers of thermally conducting material (24 and 32 in fig. 4) and layers of thermally insulating material (20,28 and 36 in fig. 2). In addition Cheriff discloses, (col. 3, lines 15-20) that the lower level insulator (36 in fig. 4) is not applied to facilitate connection of the flexible board to the display electrodes (also note 16 in figs. 1 and 2), thus a thermally conducting material is disposed as stated in claim 1.

Cheriff and Albert are analogous art because they directed to a similar problem area, namely creating flexible display technology.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the circuit board of Albert (837 in fig. 8e) with the heat-shielded multi-layered circuit board of Cheriff.

The motivation for doing so would have been to thermally insulate the display from the circuit components and thus improve the quality of the display. Also Cheriff allows for a more compact wiring scheme (note the scheme on figs. 5 and 6 of Cheriff, by incorporating multiple layers of conductor the overall size of the flexible board is able to be decreased).

Therefore it would have been obvious to combine Cheriff and Albert for the benefit of improved display quality to obtain the invention as specified in claim 1.

**With respect to claim 2**, Albert and Cheriff disclose, an electro-optic display according to claim 1 (see above).

Cheriff further discloses, wherein the heat shield comprises a printed circuit board (figs. 1 and 2) having a conductive layer therein (24 and 32 in fig. 4).

**With respect to claim 3**, Albert and Cheriff disclose, an electro-optic display according to claim 1 (see above).

Cheriff further discloses, wherein the heat shield comprises a plurality of layers of thermally insulating material (20 and 28 in fig. 4) and a plurality of layers of thermally conducting material (24 and 32 in fig. 4), the layers of thermally insulating material alternating with the layers of thermally conducting material (see fig. 4), and one layer of thermally conducting material being disposed between the layers of thermally insulating material and the layer of electro-optic material (col. 3, lines 15-20, states that the lower level insulator [36 in fig. 4] is not applied to facilitate connection of the board to the display electrodes [also note 16 in figs. 1 and 2], thus a thermally conducting material is disposed as stated in claim 3).

**With respect to claim 4**, Albert and Cheriff disclose, an electro-optic display according to claim 1 (see above).

Albert further discloses, his circuit board (837 in fig. 8e) extending across the entire layer of electro-optic material (note fig. 8e). Thus when replaced with Cheriff's board, insulating and conducting layers would extend across the entire layer of electro-optic material.

**With respect to claim 7**, Albert and Cheriff disclose, an electro-optic display according to claim 1(see above).

Albert further discloses, wherein the electro-optic material comprises a rotating bichromal member material (col. 12, lines 33-35) or an electrochromic material.

**With respect to claim 8**, Albert and Cheriff disclose, an electro-optic display according to claim 1 (see above).

Albert further discloses, wherein the electro-optic material comprises an electrophoretic material (col. 12, lines 30-32).

**With respect to claim 9**, Albert and Cheriff disclose, an electro-optic display according to claim 8 (see above).

Albert further discloses, wherein the electrophoretic material comprises at least one capsule (50 in fig. 5) having a capsule wall (col. 3 line 6 discloses a capsule membrane) encapsulating a suspending fluid and a plurality of electrically charged particles (col. 2, lines 63-67) suspended in the suspending fluid (col. 3, lines 1-2) and capable of moving therethrough on application of an electric field to the electrophoretic material (col. 9, lines 24-31).

**With respect to claim 10**, Albert and Cheriff disclose, an electro-optic display according to claim 8 (see above):

Albert further discloses, wherein the electrophoretic material comprises a substrate (52 in fig. 5, and col. 12, lines 36-40) having a plurality of closed cells (50 in fig. 5) formed therein, each of the cells having therein a suspending fluid and a plurality of electrically charge particles (col. 2, lines 63-67) suspended in the suspending fluid (col. 3 lines 1-2) and capable of moving therethrough on application of an electric field to the electrophoretic material (col. 9, lines 24-31).



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12. Claim 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albert et al. (US 6,118,426) in view of Cheriff et al. (US 5,008,656) and further in view of Leibowitz (US 4,812,792).

**With respect to claim 5**, Albert and Cheriff disclose, an electro-optic display according to claim 1 (see above).

Cheriff further discloses, wherein the heat shield comprises a polymeric film (col. 3, lines 41-45).

Neither Albert nor Cheriff expressly disclose having a metal layer formed on the polymeric film.

Leibowitz discloses a metal layer (20 in fig. 2) being formed on a polymeric film (24 in fig. 2, also note col. 4, lines 53-55; also col. 4, lines 11-15 discloses that the two layers are joined).

Albert, Cheriff, and Leibowitz are all analogous art because they are all directed to a similar problem solving area circuit board design.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the insulator/adhesive/conductor layers of Cheriff with the polymer/metal layer of Leibowitz.

The motivation for doing would have been to remove the concern over the durability of the adhesive layer over time. With Leibowitz this concern is not an issue as the polymeric layer is coated with the metal.

Therefore it would have been obvious to combine Leibowitz, Cheriff, and Albert for the benefit of not applying adhesive to obtain the invention as specified in claim 5.

**With respect to claim 6**, Albert, Cheriff, and Leibowitz disclose, an electro-optic display according to claim 5 (see above).

Leibowitz further discloses coating the polymeric layer with a conductive metal. While Leibowitz prefers copper (col. 4, lines 52-53), it would have been obvious to use aluminum instead as it is well known as a conductive metal.

The motivation for doing so would have been the decreased cost of aluminum over copper.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matsuda et al. (US 6,380,681) discloses a multi-layer circuit board arranged behind an EL display.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 8:00 - 4:00.

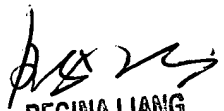
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wlb

10-28-05

  
REGINA LIANG  
PRIMARY EXAMINER